

#### **4. Draft Response to Comments on the Coeur d'Alene Lake and River Sub-basin Assessment and Wolf Lodge, Cougar, Kidd, Mica and Latour Creek TMDLs.**

##### **4.1. Introduction**

Three letters of comment on the sub-basin assessment and TMDLS have been received. These letters contained twenty-three substantive and distinctive comments. In addition to the comments, the sediment modeling technical advisory group met to discuss the sediment model and to discuss any comment made concerning the sediment model. The sediment model advisory group is made up of hydrologist and sedimentologists from state and federal agencies (USFS, BLM, IDL, SCC, IDFG), an environmental group and the timber industry. The comments are addressed in the section following with the comment expressed, the source of the comment and the response to that comment. Responses included changes in the assessment and the TMDLs. If a comment was not accepted, the reason the comment was disregarded is expressed.

##### **4.2. Substantive Comments and Response**

Comment 1: The acute salmonid sight feeding turbidity standard was misstated in the sub-basin assessment, Table 3 and misapplied to Lake Creek. The text on Lake Creek indicates that this water body is not limited by sediment.

Comment from: Nickolas Bugosh, Division of Environmental Quality Lewiston Field Office

Response 1: The acute salmonid sight feeding turbidity standard was misstated in Table 3. This error has been corrected to make clear that both the acute and chronic standards are applied in reference to a measured appropriate background measurement. The Lake Creek section has been clarified to state that the turbidity increases reported are referenced to an upstream background site in the work of Bauer, Golden and Pettit (1998). Following these clarifications, it is still the conclusion of the sub-basin assessment that Lake Creek is water quality limited and requires a TMDL.

Comment 2: RUSLE was used to model the sediment yield of dirt and gravel roads. The comment expresses the opinion that this is an improper application of RUSLE, because RUSLE has not been verified for roads.

Comment from: Nickolas Bugosh

Response 2: On the advice of the State DEQ office and the local Natural Resource Conservation Service (NRCS), RUSLE was used to model dirt and gravel roads which are county and private roads. The newer versions of RUSLE are capable of modeling roads composed of native soils and covered with gravel. These roads

should be in areas where NRCS Soils Surveys are complete. The model has been verified for this use. The sediment technical advisory group discussed this issue and was in agreement that it was appropriate to model county and private roads where Soil Surveys existed with the RUSLE model.

Comment 3: The margin of safety (MOS) discussion section in the TMDLs is not clear. It reads as if the MOS should be added to the natural background rate of sedimentation, even though it is subtracted in the tables. In addition the need for a 10% margin of safety was questioned. The comment noted that the model used to estimate sediment was repeatedly conservative in its assumptions. The comment suggested the conservatism of each assumption be quantified. It was suggested that this is an adequate MOS as specified by EPA TMDL guidance (EPA, April 1991).

Comment from: Nickolas Bugosh

Response 3: Based on this comment the 10% margin of safety was dropped. As a part of the revised Sediment Model Assumptions and Documentation section (Appendix B), the conservatism of each assumption was assessed as a percentage. These percentages were then added. For the Kaniksu granitic terrane, the model is 164% conservative; for the Belt Meta-sedimentary terrane, the model is 231% conservative. These percentages have been applied in the TMDLS as the MOS, dependent on the terrane type of the watershed in question.

Comment 4: The basic premise of the Wolf Lodge TMDL is weak because the temporal and spacial variability of fish and macro invertebrates make it difficult to measure a substantive improvement. The comment notes that no one to one or other relationship between biotic populations and sediment has been found. The monitoring plan should calculate sample size based on coefficients of variability. Reference streams cannot be used because of this variability. The comment suggests that particle size distribution and intergravel dissolved oxygen measurements would bolster the monitoring plan.

Comment from: Robert Sampson, Natural Resources Conservation Service, Boise Office

Response 4: The monitoring plan has been revised in the TMDLs to address temporal biotic variability. The 5% of the stream reach will be monitored, 1% per year over a five years period. This approach should address temporal variability of the biota. Monitoring by necessity will be limited to the low flow period during the warm summer months. This fact reduces seasonal variability.

The comment makes an excellent point. There is no one to one or other relationship between biota and sedimentation. This is the reason the approach is

taken in the TMDLs. Despite all the issues of temporal and spacial variability, assessment of Beneficial Use Reconnaissance, Fish and Game, Forest Service and University of Idaho data on fish and macro invertebrates in the nearby North Fork Coeur d'Alene River watershed indicates a pattern (IDEQ, 1999a) Reference (low impact) streams consistently have a trout population of 0.1-0.3 fish/ m<sup>2</sup>/hour effort electrofishing. This is a broad range 10 - 30 fish per 100 square meters per hour effort electrofishing. The reference streams assessed are of varying size. A similar range is found in reference streams in the Priest Lake watershed. Densities an order to two orders of magnitude lower are found on streams with sedimentation impacts. The use of qualitative indicators as young of the year, age classes and presence of other vertebrates rounds out the definition of full support.

The suggestion that coefficients of variability be developed and used to develop sample size is a good suggestion. Unfortunately, the current data base on any single watershed is insufficient to complete a sample size analysis. The TMDL implementation plans should specify that this analysis is completed as additional biotic community data is collected. The suggestion that particle size and intergravel dissolved oxygen would improve the monitoring plan is erroneous. Particle size is only very tangentially related to beneficial use support, while intergravel dissolved oxygen depletion is not an issue in any of the watersheds for which TMDLs were developed. Pool filling by cobble and coarse sand are the likely impacts to fish (IDEQ, 1999b), while the impact to macro invertebrates is less clear. Neither parameter can be directly related to the support status of the biotic communities.

Comment 5: The base sedimentation coefficient used are too low. The sedimentation rates used grouped around 15 (Belt) and 25 (Kaniksu granitic) tons per year. The comment cites considerable information to indicate that 60 - 100 tons per year is a more appropriate number.

Comment from: Robert Sampson

Response 5: The model uses the sediment yield coefficients of the WATSED model. This issue was raised with the sediment technical advisory group. The agency and private hydrologists on the group were satisfied with the WATSED values. The only explanation offered was that the values cited by the comment were those for total solids yield; sediment as well as dissolved solids. The WATSED values are actual measured values, which are calibrated to local conditions on the Clearwater Forest to the south. On the advice of the technical group the WATSED coefficients have been retained.

Comment 6: Road erosion is the primary source of sediment. The comment suggests county and private roads should have been considered.

Comment from: Robert Sampson

Response 6: The reviewer did not have benefit of the sub-basin assessment as the Wolf Lodge TMDL was reviewed and comment developed. The county and private roads were considered. Where these came into contact with the stream system, either as at a stream crossing or encroaching, their impact was modeled. The CWE assessment accounted for any mass failures from county and private roads.

Comment 7: The level of sedimentation attributable to bank erosion from agricultural lands along Wolf Lodge Creek is an order of magnitude too high. The correct values are around 30 (actually 33) tons per year.

Comment from: Robert Sampson

Response 7: The sediment delivery from banks placed in the earlier drafts of the TMDL were based on an earlier version of the model which generated higher sediment delivery rates and on the agricultural acreage. The model has been corrected and the bank erosion estimates supplied by the NRCS incorporated. The percentages assigned to agriculture and residences are now based on the estimated sediment delivery from these sources.

Comment 8: The reviewer after viewing the stream reach covering agricultural lands did not find bed load to be a problem in the stream. He did not find the statement on bed load impacts to be supported.

Comment from: Robert Sampson

Response 8: The reviewer was supplied with the TMDL alone and did not have benefit of the sub-basin assessment where many of these issues were discussed. The Coeur d'Alene Mountains are deeply dissected having relative long lower gradient valleys, which at their heads are very steep. The Wolf Lodge Valley is a remnant lake bed of an earlier Coeur d'Alene Lake. The result is that the agricultural lands are along a stream of fairly low gradient. Bed load deposition and interference with biota by this mechanism occur above this reach. The agricultural reaches of Wolf Lodge Creek and especially the spawning reach immediately above Interstate 90 are more likely affected by fine sediment from bank erosion.

Comment 9: Timber management is described as moderately intense with dense road development (p.5). The assessment should have a timber harvest inventory of the listed watersheds.

Comment from: Mike Mihelich, Kootenai Environmental Alliance

Response 9: The description in the cultural impacts section was generalized to the entire sub-basin. The comment is correct Wolf Lodge and Cedar Creeks have received heavy levels of timber harvest and road development. This change has been made in the text. It was not deemed necessary to develop a harvest history for each listed watershed. These data are imbedded in the CDASTDs (USFS) and Idaho Department of Lands (IDL) geographic information system (GIS) vegetation coverages. The purpose of the assessment, models and resulting TMDLs was to address sediment not clearcuts. The Horizon Environmental Impact Statement information quoted was more than ten years old, while the GIS coverages are updated on a constant basis.

Comment 10: Direct hill slope erosion from harvested lands is much higher than the values assigned. A Geomax report of 1988 indicates higher hill slope erosion. Water yield caused sedimentation is not addressed. The fishery in the watersheds has declined in recent years.

Comment from: Mike Mihelich

Response 10: The expert group assembled to advise in model development by consensus of those present believe the WATSED sediment yield coefficients, which are based on actual watershed measurements of sediment yield reflect the sediment yield of hill slopes after various land uses. The Geomax estimations cited are based on assumptions of water and sediment yield not on actual measurements. The Geomax estimates were made for Marie Creek are ten years old and prior to the harvest which arose from Horizon. When these estimates were made, the cutting was confined to the ridges. Current GIS data indicates the same situation exists in the Marie Creek watershed.

We agree that harvest increases flow. The existing literature indicates it is the base flow that is increased. Flow increases during high discharge periods are better associated with an increase in the stream capture area at stream road crossings. In any case no quantitative relationship between increased flow or “compression” of discharge events and sediment yield was identified by the expert group. Without a relationship quantitative modeling is not possible. The model does identify road crossings, which could be addressed in an implementation plan for road sediment, road failure and water capture.

Comment 11: Description of the fishery in the Coeur d’Alene River above Cataldo is questioned.

Comment from: Mike Mihelich

Response 11: The cutthroat trout and chinook salmon fishery of the upper segments of the Coeur d'Alene River is well known to Idaho Fish and Game and local fisherman. The large river BURP results indicate the health of the fishery. Unpublished expert witness reports from the metals natural resource damage case indicates 12,000 fish per mile in these segments.

Comment 12: RASI data for Skookum Creek should be applied to Wolf Lodge and Marie Creeks.

Comment from: Mike Mihelich

Response 12: Skookum Creek is a tributary to the Little North Fork Coeur d'Alene River. Riffle armor stability (RASI) data for this and several other water bodies in the North Fork Coeur d'Alene River has been assessed in the North Fork Coeur d'Alene River Sub-basin Assessment (17010301). High RASI values indicate stream bed stability, but are distinctive to the watershed where it is collected. The Skookum Creek data would not properly be extrapolated to Wolf Lodge Creek.

Comment 13: Residual pool volume data from the Horizon EIS should be considered.

Comment from: Mike Mihelich

Response 13: Residual pool volume data, where it is available from recent BURP surveys is assessed. The Horizon data is more than ten years old. Since it was developed, a major sediment loading event, the 1996 rain on snow event, and two channel forming flows, 1997 and 1999 discharges have occurred. Residual pool volume data of ten years ago plus is likely not indicative of in stream conditions, especially after the channel forming runoffs of 1997 and 1999.

Comment 14: Simply addressing the roads in Wolf Lodge Creek will not address sediment problems.

Comment from: Mike Mihelich

Response 14: We agree that timber harvest activities have impacted Wolf Lodge and Marie Creeks. The sediment technical advisory group identified only quantitative relationships between road features and sediment. The model used points back to the road features. Implementation of the TMDL will be outlined in an implementation plan. The TMDL does not in any way encumber the solutions in an implementation plan. Although the model points to roads and road impacts, logging cessation is not in any way ruled out by the TMDL. Such decisions are not appropriate for the load allocation.

Comment 15: Several comments refer to the use of the model, WATSED and its shortcomings. Comments speak to inadequate documentation of WATSED.

Comment from: Mike Mihelich

Response 15: The model assumptions and documentation (Appendix B) make it very clear that WATSED is not used to model sediment. It is made clear the WATSED sediment yield coefficients, both mean and range are used to model sediment from forest land use. The model is designed to look at the spectrum of land use, road impacts and stream bank erosion. It uses several data and model inputs to achieve this end.

The model does account for episodic sediment loading both as measured road bed failures and estimated encroaching roads sediment generation. The model does separate fine and coarse sediment yield to the streams. An estimation of the conservatism of the model is made in the model assumptions and documentation (Appendix B). Applied on the Belt terrane, the model is estimated to be 231% conservative.

Comment 16: The applied model underestimates sediment yield from harvested land and the amount of non-stocked land in the Wolf Lodge Creek watershed.

Comment from: Mike Mihelich

Response 16: As stated earlier, the model is driven by inputs from Forest Service and IDL GIS data bases. These data bases are made current on a regular basis. The source of the comment information is 5 - 10 years old and most likely out of date. As originally applied, all clearcut lands younger than ten years were given a higher sediment yield rate. The sediment technical advisory group identified this approach as in error and indicated that only non-stocked stands should have the higher coefficient applied.

Comment 17: The comment is addressed to section 2.4.1; Pollution Control Efforts to Date. The comment indicates that addressing roads alone will not recover Wolf Lodge Creek. The comment refers back to the arguments made earlier concerning flow.

Comment from: Mike Mihelich

Response 17: The section simply lists the pollution control measures put in place to date. Among these is road crossing and road obliteration. Comments about flow have been addressed earlier. The comment wants sedimentation associated with flows addressed. The model addresses sediment that can be addressed through quantitative measurements. No measured relationship has been identified for flow

and sedimentation.

Comment 18: Similar comment to comment 17 made concerning section 2.4.2.; Pollution Control Strategies. The comment disagrees with a pollution credit trading system to address road problems.

Comment from: Mike Mihelich

Response 18: The section simply lays out approaches, but is not intended to exclude any approach to abating sedimentation. A TMDL implementation plan could identify harvest cessation as an approach on some or all of the watershed. A conflict in points of views is apparent between the sediment technical group and the individual making the comment. The group clearly believes roads are the major source of sediment, while clear cuts are believed by the individual commenting to be the major source of sediment. As the TMDL development agency, DEQ must base models on quantities of sediment loading. No measured relationship between sediment loading and flow is offered in the comment. The model depends on measured sediment yield rates, measured fine sediment yield from roads, measured road bed failures and delivery and measured encroaching road beds.

The individual commenting must also keep in mind that sediment is not delivered in large amounts to the stream monthly or even annually, but in episodic events, which recur every 10 - 15 years. Actual measurements must be annualized in order to develop a sediment load in tons per year. This does not mean the load from these episodes does not influence the beneficial uses after one year. It is in the bed and affecting uses for a number of years. The TMDLs make this point and provide estimates of how much material might be in the bed from the most recent (1996) large loading event.

Comment 19: The Clean Water Acts interim goal of protection of fish will not be met.

Comment from: Mike Mihelich

Response 19: The TMDL sets full support of the cold water biota as the goal. It defines full support in terms of age class distribution of trout, trout density, presence of other key vertebrates and a macro invertebrate index greater than 3.5. Since the amount of sediment impacting cold water biota has not been quantified for any stream and not for these streams this appears the most conservative approach to the state.

Comment 20: Timber sales are not addressed as point discharges.

Comment from: Mike Mihelich



Comment 20: This is currently a draft regulation. It is unclear whether it will be promulgated. For this reason it has not been addressed.

Comment 21: The comment disagrees with the assumptions stated on page 2 of the Wolf Lodge TMDL.

Comment from: Mike Mihelich

Response 21: The assumptions are 1) biota are fully supported at background levels of sedimentation; 2) the stream has some finite level of sedimentation above background at which the biota is fully supported; 3) the biota will respond to a level of full support when that as yet non-quantified level of sedimentation is met. The state, respectfully, believes these assumptions to be correct.

Comment 22: The comment disagrees with the background level of sedimentation estimated for the Wolf Lodge Creek watershed citing problems with the WATSED model.

Comment from: Mike Mihelich

Response 22: The background estimation is not based on WATSED, but on the sediment yield coefficient from WATSED, which is based on measured values. The estimate is clearly identified as the acreage of the watershed multiplied by the mean sediment yield coefficient for the Belt meta-sedimentary terrane type. The estimate assumes a totally forested, non-roaded watershed.

Comment 23: The comment indicates that the Forest Service uses feedback management approaches and that the reviewer has no faith in such approaches.

Comment from: Mike Mihelich

Response 23: As reviewed earlier, clear measures of full support of the beneficial use cold water biota are defined. These measures are based on reference streams primarily in the upper part of the North Fork Coeur d'Alene River watershed. Except for wild fires during the early part of the 20th century, few human caused impacts to these watersheds exist. The goal is based on measurable values not on value judgements.

#### **4.3. References**

Bauer, S.B., J. Golden and S. Pettit 1998. Lake Creek Agricultural Project, Summary of Baseline Water Quality Data. Pocketwater Incorporated, 8560 Atwater, Boise ID 83714. 138pp.

IDEQ, 1999a. North Fork Coeur d'Alene River Sub-basin Assessment. Idaho Department of Health and Welfare, Division of Environmental Quality, Coeur d'Alene Regional Office, 2110 Ironwood Parkway, Coeur d'Alene ID 83814. 44 pp.

IDEQ, 1999b. Coeur d'Alene Lake and River Sub-basin (17010303) Assessment. Idaho Department of Health and Welfare, Division of Environmental Quality, Coeur d'Alene Regional Office, 2110 Ironwood Parkway, Coeur d'Alene ID 83814. 37 pp.

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